Remarks

Claims 45-65 were pending in the subject application. The applicants acknowledge that claim 65 has been withdrawn from further consideration as being drawn to a non-elected invention. By this Amendment, the applicants have amended claims 45-65 and added claims 66-69. Support for the amendments can be found throughout the subject specification and in the claims as originally filed. Entry and consideration of the amendments presented herein is respectfully requested. Accordingly, claims 45-64 and 66-69 are currently before the Examiner. Favorable consideration of the pending claims is respectfully requested.

The applicants and the applicants' undersigned representative appreciate the courtesy extended by Examiner Tongue during the telephonic interview conducted with the undersigned on February 20, 2009. As acknowledged during the interview, dependent claims 46 and 51 were identified as rejected, and should merely have been objected to as dependent from a rejected base claim. Examiner Tongue indicated that claims 46 and 51 would be allowable if rewritten in independent form.

By this Amendment, claims 66-69 have been added. Support for claims 66-69 can be found, for example, in paragraph [0095] at page 41 of the specification.

Claims 45, 47, 49, 50, 52, 54, 55, 57, 59, 60, 62 and 64 are objected to because of informalities. The Office Action indicates that the acronym "HLA" should be spelled out for the first instance of use. By this Amendment, the applicants have replaced the acronym "HLA" with "Human Leukocyte Antigen" immediately preceding the acronym in parenthesis. Accordingly, reconsideration and withdrawal of the objection is respectfully requested.

Claims 45-64 are rejected under 35 U.S.C. § 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventors, at the time the application was filed, had possession of the claimed invention. The Office Action indicates that the specification lacks a full description of a polynucleotide encoding an HLA-binding fragment of SEQ ID NO:1 or its complementary polynucleotide, or vector or transformed host cell comprising the fragment or its complement. The applicants respectfully submit that the specification provides an adequate written description of the claimed subject matter. However, the applicants have amended the claims to recite that the HLA

binding fragment of b) comprises at least five consecutive amino acids of SEQ ID NO:1. Support for this amendment can be found, for example in paragraph [0050] at pages 25 and 26, and paragraph [0095] at page 41 of the specification. Furthermore, the applicants have amended the claims to recite that the polynucleotide of c) is complementary along the full length of the polynucleotide of a) or b). Support for this amendment can be found, for example, in paragraph [0014] at pages 13 and 14 of the specification.

The applicants respectfully submit that those of ordinary skill in the art would have been able to screen peptide compositions for the recited HLA binding activity in animals and humans in view of the teachings of the specification and the state of the art at the time the application was filed. The skilled artisan can determine suitable fragments of five amino acids in more in length that retain the HLA binding property of the full length polypeptide (SEQ ID NO:1). Indeed, the instant specification provides instructions for how a skilled artisan could go about identifying and screening HLA binding fragments. For instance, as indicated in paragraphs [0026] – [0029], at pages 16 and 17 of the specification, *Bal*31 exonuclease can be used for time-controlled limited digestion of DNA (commonly referred to "erase a base" procedures). See for example, Maniatis, *et al.* (1982) *Molecular Cloning: A Laboratory Manual*, Cold Spring Harbor Laboratory, NY, pages 135-139. Given any known DNA sequence, the skilled artisan, by using *Bal*31 exonuclease, could easily have removed nucleotides from either or both ends of the polynucleotide to systematically, routinely, and certainly generate a wide spectrum of fragments from all along the length of the polynucleotide molecule; and then introduce them into host cells. Likewise, successive N-terminal and/or C-terminal degradation of the native polypeptide can be carried out using exoproteases, such as carboxypeptidases. Endoproteases or acids having specific peptide bond cleavage activity can also be used to obtain portions that retain the ability to bind HLA. Furthermore, suitable assays for determining peptide binding to HLA molecules are described in the specification in paragraph [00125] at pages 51 and 52, and in Example 1, at pages 52-54 of the specification.

With the benefit of the subject specification, fragments of the recited polynucleotide, and polypeptides encoded by those fragments that retain the ability to bind HLA, can be obtained by one of ordinary skill in the art. The written description requirement states that the Applicants must describe the invention; it does not state that every invention must be described in the same way. The

applicants acknowledge that sequences and structural formulas provide a convenient method of demonstrating possession of many molecules; however, other identifying characteristics or combinations of characteristics may demonstrate the requisite possession. In *Enzo Biochem, Inc. v. Gen-Probe, Inc.*, 323 F.3d 956, 963; 63 USPQ2d 1609, 1613 (Fed. Cir. 2002), the Court reaffirmed that deposit of a physical sample may replace words when description is beyond present scientific capability. In *Amgen, Inc. v. Hoechst Marion Roussel, Inc.*, 65 USPQ2d 1385 (Fed Cir. 2003), the Court explained further that the written description requirement may be satisfied "if in the knowledge of the art the disclosed function is sufficiently correlated to a particular, known structure." For example, possession of an antibody may be demonstrated based on a description and characterization of its corresponding antigen. Disclosure of an antigen fully characterized by its structure, formula, chemical name, physical properties, or deposit in a public depository provides an adequate written description of an antibody claimed by its binding affinity to that antigen. *Noelle v. Lederman*, 69 USPQ2d 1508, 1514 (Fed. Cir. 2004) and MPEP 2163 IIA3(a).

An applicant shows possession of the claimed invention by describing the claimed subject matter with all of its limitations using such descriptive means as words, structures, figures, diagrams, and formulas that fully set forth the claimed invention. *Lockwood v. American Airlines, Inc.*, 107 F.3d 1565, 1572, 41 USPQ2d 1961, 1966 (Fed. Cir. 1997). There is no *per se* rule that an actual reduction to practice must occur prior to filing, or that the need to screen for candidate molecules precludes adequate written description of the molecules. Possession may be shown in a variety of ways, including description of an actual reduction to practice, or by showing that the invention was "ready for patenting" such as by the disclosure of drawings or structural chemical formulas that show that the invention was complete, or by describing distinguishing identifying characteristics sufficient to show that the applicant was in possession of the claimed invention. See, *e.g.*, MPEP §2163.02, *Pfaff v. Wells Elecs., Inc.*, 525 U.S. 55, 68, 119 S.Ct. 304, 312, 48 USPQ2d 1641, 1647 (1998); *Regents of the University of California v. Eli Lilly*, 119 F.3d 1559, 1568, 43 USPQ2d 1398, 1406 (Fed. Cir. 1997); *Amgen, Inc. v. Chugai Pharmaceutical*, 927 F.2d 1200, 1206, 18 USPQ2d 1016, 1021 (Fed. Cir. 1991) (one must define a compound by "whatever characteristics sufficiently distinguish it"). Compliance with the written description requirement is a fact-based inquiry that will necessarily vary depending on the nature of the invention claimed. *Enzo Biochem, Inc.*

Fragments encompassed by the recited genus would be envisioned by those skilled in the art. Further structural determinants are not required to identify and circumscribe the polynucleotides encoding the recited fragments, or polynucleotides fully complementary to polynucleotides encoding such fragments. Thus, in view of the structural and functional determinants recited in the claims, the applicants respectfully submit that one of ordinary skill in the art would appreciate that the applicants were in possession of the polynucleotides encoding HLA binding fragments comprising at least five amino acids of SEQ ID NO:1, and polynucleotides complementary along the full length of such polynucleotides, as recited in the claims as currently amended. Accordingly, reconsideration and withdrawal of the rejections under 35 U.S.C. § 112, first paragraph, is respectfully requested.

Claims 55-64 are rejected under 35 U.S.C. § 112, first paragraph, as nonenabled by the subject specification. The Office Action indicates that the specification does not enable one of ordinary skill in the art to make and/or use the transformed host cell, as currently claimed. The applicants respectfully submit that the claims as filed are enabled. However, by this Amendment, the applicants have amended claims 55-64 to recite that the transformed host cell is "isolated", as suggested by the Examiner at page 10 of the Office Action. Support for this amendment can be found, for example, in paragraphs 38-40 at pages 20 and 21 of the specification. Accordingly, reconsideration and withdrawal of the rejection under 35 U.S.C. § 112, first paragraph, is respectfully requested.

Claims 45, 55, 58-60, 63 and 64 are rejected under 35 U.S.C. § 102(b) as anticipated by Invitrogen catalog (1997). The Office Action indicates that the Invitrogen catalog discloses a random primer set that contains every possible hexametric DNA sequence. The applicants respectfully assert that the Invitrogen reference does not anticipate the claimed invention.

As an initial matter, the applicants note that the Office Action indicates that the rejected claims are drawn to an isolated or purified polynucleotide: a) encoding a polypeptide comprising SEQ ID NO:1; b) encoding a HLA binding fragment of SEQ ID NO:1; or c) that is complementary to the polynucleotide of a) or b). However, claims 55, 58-60, 63 and 64, which are drawn to a transformed host cell, are included in this rejection. The cited reference does not disclose any transformed host cell. By this Amendment, the applicants have amended the claims to recite that the HLA binding fragment of b) comprises at least five consecutive amino acids of SEQ ID NO:1.

Furthermore, the applicants have amended the claims to recite that the polynucleotide of c) is complementary along the full length of the polynucleotide of a) or b). The Invitrogen reference discloses primers reported to consist of every possible hexameric sequence. The Invitrogen reference does not disclose an isolated or purified polynucleotide that a) encodes a polypeptide comprising SEQ ID NO:1, or b) encodes an HLA binding fragment of SEQ ID NO:1, wherein the fragment comprises at least five consecutive amino acids of SEQ ID NO:1, or c) that is complementary along the full length of the polynucleotide of a) or b), as recited in the independent claims as currently amended. Accordingly, reconsideration and withdrawal of the rejection under 35 U.S.C. § 102(b) is respectfully requested.

It should be understood that the amendments presented herein have been made solely to expedite prosecution of the subject application to completion and should not be construed as an indication of the applicants' agreement with or acquiescence in the Examiner's position. The applicants expressly reserve the right to pursue the invention(s) disclosed in the subject application, including any subject matter canceled or not pursued during prosecution of the subject application, in a related application.

In view of the foregoing remarks and amendments to the claims, the applicants believe that the currently pending claims are in condition for allowance, and such action is respectfully requested.

The Commissioner is hereby authorized to charge any fees under 37 CFR §§1.16 or 1.17 as required by this paper to Deposit Account No. 19-0065.

The applicants invite the Examiner to call the undersigned if clarification is needed on any of this response, or if the Examiner believes a telephonic interview would expedite the prosecution of the subject application to completion.

Respectfully submitted,

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